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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,470	01/31/2006	Fumihiro Yaguchi	00380487PUS1	3906

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BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER	
STIMPERT, PHILIP EARL	

ART UNIT	PAPER NUMBER
3746	

NOTIFICATION DATE	DELIVERY MODE
12/29/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/566,470	YAGUCHI, FUMIHIRO	
	Examiner	Art Unit	
	Philip Stimpert	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 August 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 January 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 2,690,128 to Basilewsky (Basilewsky hereinafter) in view of US Patent 4,965,864 to Roth et al. (Roth) and US Patent 4,717,874 to Ichikawa et al. (Ichikawa).

3. Regarding claim 1, Basilewsky teaches an electromagnetic pump comprising a cylinder (16, 22, 25), a moving member (26) being movably accommodated in the cylinder and having a permanent magnet (col. 3, ln. 60-61), and air-core electromagnetic coils (42, 43, air-core because tube 16 is non-magnetic per col. 3, ln. 58-59, and 49 is "heat insulating material" which those of ordinary skill in the art would expect to be non-magnetic) being fitted around the cylinder (16, see col. 4, ln. 31). Those of ordinary skill in the art would appreciate that inasmuch as the piston (26) is a permanent magnet and is caused to reciprocate by the coils (42, 43), electric current flows in opposite directions in the coils. Basilewsky also teaches pump chambers (22, 25) for sending a fluid, the pump chambers being formed in the cylinder. Basilewsky does not teach a piston position sensor of any kind, including an air-core detecting coil as claimed. However, Roth et al. teach an electromagnetic pump having an electromagnetically reciprocated piston that includes control circuitry for controlling the

pumping action, including a piston position sensor (col. 3, ln. 52). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a piston position sensor to the pump of Basilewsky in order to provide more direct control thereof. Ichikawa teaches a linear position sensor in general, and particularly teaches an air-core detecting coil (1AC, Fig. 10) surrounded by a yoke (4'). Ichikawa teaches providing the sensor around the shaft of a piston (Figs. 47-48), and teaches that the position of the piston is detected by flux caused by a permanent magnet disposed in the piston. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a position sensor as taught by Ichikawa to the pump of Basilewsky to provide the sensor taught by Roth. Thus provided, the detecting coil would be placed around the cylinder (surrounding the piston as in Ichikawa), and would thus be coaxial with the motive coils. Further, inasmuch as the position sensor would need to surround the piston, it would necessarily be "close" to all of the axial end faces of the motive coils, including the opposed inner faces. Ichikawa teaches providing a yoke (4') having a U-shaped cross-section (as in Fig. 10) which constitutes the claimed yokes and outer yoke. Since Ichikawa teaches that the yoke (4') is a "magnetic substance case," it would inherently form a magnetic circuit as claimed, and the magnetic flux in that circuit would interlink with the detecting coil to detect the position of the movable member.

4. Regarding claim 9, Ichikawa teaches that the induced voltage is in a detection range (Fig. 4). Finally, inasmuch as the current and induced voltage variation could be larger than they would be in this system, they may be considered “small.”

Response to Arguments

5. Applicant's arguments, see page 5, filed 31 Aug 09, with respect to the rejection(s) of claim(s) 1 and 9 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Basilewsky, Roth, and Ichikawa, as set forth above.

6. Applicant's arguments with respect to claims 1 and 9 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent 5,158,932 to Hinshaw et al.(col. 7, ln. 45-48) teaches non-magnetic thermal insulation which could be used as the insulation (49) of Basilewsky to maintain an air-core configuration.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Philip Stimpert whose telephone number is (571)270-1890. The examiner can normally be reached on Mon-Fri 7:30AM-4:00PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art Unit 3746

/P. S./
Examiner, Art Unit 3746
18 December 2009